PERFORMANCE MANAGEMENT IN MAINFRAME ENVIRONMENTS

– KEY CONSIDERATIONS –

It is safe to say computers and other IT hardware are critical to today's business operations. If physical hardware is slow or fails, organizations can miss deadlines and targets causing a cascade affect that hurts the bottom line. The same can be said about software applications, which companies need to work continuously, whether internal or external facing. Performance Management solutions provide the continuous monitoring and management necessary to make sure critical business applications are operating at optimal levels.

From supporting critical business applications, to enterprise transactions and hosting a majority of the world's corporate data, the mainframe's high-availability and performance is critical to providing the experience end customers demand. Further, technologies such as mobility, Internet of Things and data analytics are increasing the pressure to provide continuous availability and scalability of mainframe services, while simultaneously increasing transaction volume and complicating performance.

Any performance related issues that affect the transaction stage could impact customer satisfaction and ultimately revenue. The goal of Performance Management solutions that include the mainframe is to detect and diagnose application performance issues across the entire IT environment as soon as possible—or better yet predictively—enabling them to be solved or prevented more quickly, thus saving money in the long run.

The difference between an application delivering a good or bad user experience could be the result of back-end system response times, architectural limitations, poor programming, or unforeseen platform interactions. Tracking down the cause of poor performance as well as rolling out updates or new applications involves both distributed and mainframe systems. The following looks at some of the key considerations to help facilitate deeper discovery when evaluating a prospective solution to optimize performance of critical business applications that rely on the mainframe.

1 **Prevention and Remediation:** More than isolating issues and reducing Mean Time to Resolution, a solution should help proactively prevent problems.

Does it provide real-time visibility into mainframe application performance and transaction flows?

Companies need a solution that keeps an eye on critical z/OS metrics using intelligent and dynamic thresholds to minimize false positives. Any basic solution needs to provide operators and administrators with real-time visibility into mainframe application performance and transaction flows, but an effective solution should also help simplify mainframe performance management and increase the effective use of mainframe system resources. While some solutions have a modicum of connectivity or agents to provide some level of insight into mainframe performance, few provide the in-depth facilities to monitor and manage the system performance and availability of z/OS and z/OS UNIX environments.

Can it provide proactive prevention of performance issues?

Proactive problem prevention in association with quick remediation—even automated—can solve issues before they impact critical business applications. Systems are getting smarter, using analytics to learn preferences and make real-time suggestions for remediation. The inclusion of machine learning allows the system to learn overcoming strict static programmed instructions (i.e., manually configured thresholds) by making real-time data driven predictions or decisions. This

	allows systems to analyze historical data, build dynamic thresholds, reduce false positives, and use real time analytics to more accurately identify abnormal behavior that might cause an issue.
Will it help simplify and streamline automated processes?	In addition to proactively alerting operations when performance issues arise, solutions should offer some form of automation to help simplify and streamline manual processes and minimize human error. This enables automated recovery actions, reducing the negative impact to critical processes and applications.
Does it include all the necessary components?	A requirement for multiple products can increase overall complexity and cost. When vendors discuss capabilities, they often do so irrespective of the number of individual components that must be involved. Due to the plethora of systems and environments that must be supported, most vendors provide a family of products with multiple optional components that are individually licensed. Some vendors however, provide more value, including more support through a single offering.
Are there facilities to monitor down to the code level?	Solutions that also monitor and analyze business transactions down to the code level can provide actionable insights into optimizing applications. More than the graphical review of collected performance data, developers have the ability to trace a transaction from a higher vantage point all the way into underlying SQL statements or source code. Developers can more cost effectively identify the root cause of application inefficiencies helping reduce hardware and software costs, decrease response times, and ultimately improving customer satisfaction.

2 **Skills Gap:** Any new solution needs to help address the transition from experienced mainframe personnel to newer generations.

Does the solution provide modern, familiar graphical user interface elements?	Modern tooling can reduce the learning curve and improve productivity by reducing the number of manual steps. While outgoing experienced staff may still prefer traditional 3270 interfaces, the incoming generations have matured with easy to learn and navigable systems of engagement. A familiar graphical interface helps new staff quickly become familiar with subsystems while making performance issues easier to locate and troubleshoot.
How difficult is it to install and maintain?	As the population of mainframe personnel shift to newer generations, Web-based and simplified graphical user interfaces have become increasingly important. Today, a number of vendors are trying to ease the installation process of their software solutions, introducing Web-based interfaces to reduce the effort around installing and maintaining mainframe solutions. This allows mainframe personnel to quickly apply updates and get back to more meaningful tasks.
What kind of visualizations, dashboards, and reports are available?	Visualizations within dashboards and reports help users quickly understand the big picture so they can better assess the areas that require deeper investigation. While operations teams correlate infrastructure metrics with application metrics to help solve problems faster, the addition of data visualizations support ease of use, helping determine what performance metrics mean in each individual system, assembling them into a holistic view of an application or system. In short, it means that performance issues are resolved quickly and more efficiently so that the impact to the bottom line is minimized.
Are review and admin interfaces available via a mobile device?	Investments in modern web-based interfaces help improve access via mobile devices allowing staff to quickly review root cause analysis and support remediation even when away from the office. Unfortunately, too many tools still require thick clients or Java based applications to access their respective interfaces.

3 **Overall TCO:** Expect a decreased TCO through productivity gains, application tuning, automation, performance optimization, and value.

How will it help increase the productivity of existing staff?	Look for solutions that support automation to reduce manual effort, a single integrated interface to eliminate the transition between disparate ones—or worse manual correlation of disparate performance related data—and automatically generated dynamic baselines of all metrics to improve alert quality and reduce alert distractions. Providing personnel with the tools necessary to complete their tasks more productively not only helps to reduce the demands on these personnel, but also helps them fulfill various requests more rapidly.
What is the out of the box value versus the additional cost of "optional" components?	Vendors can package their respective solutions very differently, some providing more value in a comparable license cost. For example, the inclusion of predictive analytics that proactively detects trends and abnormal patterns of operation provides significant value-added capabilities that, in some cases, might otherwise require a separate purchase.
Does the solution exploit IBM zIIPs?	Some percentage of processing should be offloaded to help reduce any associated MLC costs. Mainframe solution vendors continue to reduce resource requirements through shared common services for their respective suites of products, and continue to offload processing to IBM z Systems Integrated Information Processors (zIIPs) to reduce associated operating costs.
Can the vendor support application tuning?	Application tuning at the code (or SQL) level can help optimize application performance inefficiencies, which ultimately reduces costs associated with IBM MLC. The ability to tune applications to help decrease CPU usage during peak times can have significant value, particularly if it helps postpone pending new processor purchases, which themselves would also have added software licensing costs.

4 **End-to-End Visibility:** An integrated solution needs to facilitate monitoring across all environments through a single interface and eliminate manual data correlation.

Will it facilitate performance monitoring across environments and IT disciplines?	Performance issues and bottlenecks rear their heads at any and all possible points in an IT environment and as such it is imperative that implemented performance management solutions support both the distributed and mainframe environments. For example, a measurable reduction in throughput of mainframe transactions may not necessarily be due to the mainframe itself, but could also be attributed to a performance drop in distributed applications that touch the mainframe (i.e., making fewer requests).
Does it include support for all the necessary subsystems?	Today's applications typically require multiple moving parts with access to a number of subsystems from mobile devices all the way back to the mainframe. Likewise, today's Performance Management solutions require a number of components to support this plethora of systems. A vendor's solution should provide customers with all the necessary components to address a full mobile-to-mainframe performance management solution without requiring them to purchase additional third party solutions and deal with associated integration issues.
How many disparate interfaces are involved?	The need to switch between multiple interfaces, or worse manually correlate the disparate performance data provided by each, can significantly hinder the speed of problem resolution. Having solutions that combine systems and network management into a single interface, with embedded analytics, automation, and end-to-end monitoring provides greater visibility into real time end-user transactions.

Transactions can be examined as they flow across distributed and mainframe environments to more easily ascertain what nodes are the sources of any performance impact.

5 **Adding Value:** Continued innovation and an extensive product portfolio reduce the need for third party solutions.

Could a solution be extended to facilitate mainframe application modernization?	As established applications are altered to provide new capabilities, or as processes are changed to support more rapid DevOps style development and implementation procedures, Performance Management tools become increasingly important to help quickly discover and resolve performance issues anywhere along the tool chain. As part of a test deployment, developers can use the same performance management tools as Operations to see any impact changes will have before they are an issue.
Can it be integrated with DevOps processes to help developers discover and minimize performance issues?	While not always the case, some vendors can provide customers with an extensive portfolio acting as a single source for a customer's mainframe (and distributed) needs allowing them to capitalize on increased integration, potential discounts, fewer support contracts, and more, while minimizing cross vendor accusations whenever there are issues. By running Performance Management solutions earlier in the lifecycle, development teams get feedback in advance of how applications will eventually perform in production and can take corrective action much earlier.
Does the vendor have a proven track record and are they in it for the long run?	A strong track record of continued investment, innovation and support are fundamental in mitigating risk and as part of the overall decision-making process. When considering some of the larger vendors, corporate viability is typically not an issue (although acquisitions do happen). However, public companies need to be accountable in areas such as social responsibility and sustainability, as well as to key industry stakeholders (i.e. shareholders, employees, and community members). While private companies may have additional flexibility in terms of product innovation, they can make more sudden product transitions that might otherwise isolate existing customers, forcing them to upgrade or migrate. Private investment firms primarily seek investments that can have rapid gains in equity and a significant possibility of liquidity. Prospective customers need to be aware of what products may be spun off and sold, or deprecated to divert funds and focus to higher growth segments. As always, vendor reputation and customer references, recommendations, and overall satisfaction levels will play a key role when selecting a solution.

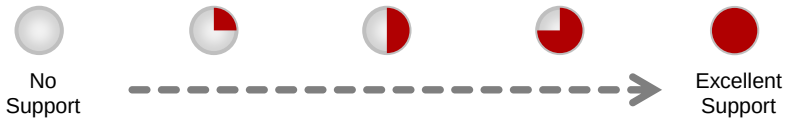
Customer satisfaction and user time as a cost consideration, while more of an esoteric savings, is difficult to measure. That said, there are numerous references to customers leaving their brokerage firms, or banks, or Internet providers, etc., because of poor response times. Customers today have more options and less patience. The difference between an application delivering a good or bad user experience could be the result of back-end system response times, architectural limitations, poor programming or unforeseen platform interactions. Tracking down the cause of poor performance as well as rolling out updates or new applications involves not only technology but also people and processes as part of the solution. For this reason, end-to-end mobile to mainframe performance management provided through a single interface helps operations teams isolate issues more quickly without having to manually try to correlate alarms between disparate products and user interfaces.

PERFORMANCE MANAGEMENT FOR MAINFRAME

– A COMPARATIVE ASSESSMENT –

The following provides a brief look at two vendor solutions that focus on Mainframe Performance Management: BMC MainView and CA Mainframe Operations Intelligence. While both vendors have dedicated offerings, each can also provide and integrate additional products to further augment their capabilities in other areas.

The following table looks at the superset of functionality provided by each vendor's solution, regardless of price. While prospective customers will not to be left wanting from a technical perspective, vendor packaging and licensing practices (and customer budget) may significantly impact whether or not the full functionality is available. For example, one vendor may offer features included with the core product that are otherwise licensed options in another vendor's solution.



Core Evaluation Factors		
Feature	**BMC**	**CA**
Platform Overview		
Architecture		
Client OS Support		
Distributed Support		
Mobile Support		
Cloud / Virtualization Support		
SaaS / Managed Service Offering		
Storage Support		
Management and Optimization		
Real-Time Monitoring / Centralized Monitoring		
Subsystem Support (e.g., IMS, DB2, CICS, etc.)		

Core Evaluation Factors		
Feature	**BMC**	**CA**
Middleware Support		
Application Tuning		
Automated Remediation		
Network Management		
Portfolio and Integration		
Breadth of Portfolio		
Integration (of Complementary Components and Cross-Application) Support		
zIIP Support / Exploitation		
Cohesiveness (e.g., Branding)		
Administration and Maintenance		
Ease of Installation / Configuration / Maintenance		
User Interface		
Ease of Use / Wizards		
Simplified Administration and Automation		
Dashboards and Reporting		
Visualizations		
Alerting and Notifications		
Predictive Analytics		
Trend / Retrospective Analytics		
Backup and Recovery		

While this assessment was commissioned by CA Technologies Inc., Zibis Group does not endorse either vendors' solution, rather profiling them in this instance to illustrate several areas of consideration, specific to the use of modern technology and techniques, and towards the adoption of a mainframe performance management solution strategy.

ABOUT ZIBIS GROUP

Zibis Group Inc. ("Zibis Group") is a leading source for market research and advisory services on the Information and Communications Technology (ICT) industry and related sectors. We assist vendors, government institutions, academia, non-profits and other key industry stakeholders by providing them with the tools they need to make informed decisions.

Zibis Group is a niche play in the marketplace for customized ICT sector research. We understand that all companies have distinct interests and unique business challenges. We thrive on rising to the occasion and in seeing our clients succeed. Technology is changing and we're here to help.

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